

ORIGINAL ARTICLE

Organizational learning during COVID-19: A qualitative study of nurses' experiences

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Abstract

Aim: The aim of this study is to test the validity of the Organizational Learning in Hospitals model in the context of the COVID-19 pandemic.

Background: Organizational learning is especially crucial in circumstances of intense, complex, enduring change, as with the COVID-19 pandemic. Nurse managers need additional guidance for fostering organizational learning under such circumstances. The Organizational Learning in Hospitals model may be a helpful resource but requires additional validation.

Methods: Semi-structured interviews were conducted to gather 19 nurses' first-hand experiences of organizational learning during the COVID-19 pandemic. Data were analysed using deductive thematic analysis.

Results: Nurses' experiences of organizational learning generally aligned with the tenets of the model. Specifically, effective organizational learning occurred when the contextual factors and mechanisms portrayed in the model converged. Model and contrary cases illustrate this phenomenon.

Conclusions: This study validates and adds context to the model. It offers practical examples of the contextual factors and mechanisms of organizational learning. Leaders can use the model to guide their efforts to foster organizational learning.

Implications for Nursing Management: This study reaffirms the importance of nurse leaders' central role in organizational learning. Nurse leaders can use the Organizational Learning in Hospitals model, and the practical examples provided, to foster organizational learning during challenging times.

KEYWORDS

COVID-19, leadership, nurse managers, organizational learning, nurses

1 | INTRODUCTION

In late 2019, a novel coronavirus struck Wuhan, China. The disease, later named COVID-19, was first identified in a cluster of patients with pneumonia and ultimately spread across the globe (McIntosh et al., 2021). To slow the spread of disease, governments and public health officials urged people to social distance, wear face masks and

only leave home when necessary (Centers for Disease Control and Prevention, 2020). Just as people made significant adjustments to their daily lives, healthcare workers needed to adapt their practices to meet the challenges presented by COVID-19. Frequent, rapid changes related to screening, testing, isolating, treating and immunizing for COVID-19 were necessary (Auerbach et al., 2020). Healthcare organizations struggled to meet staffing demands and to provide

front-line workers with adequate supplies and personal protective equipment (PPE; Loh et al., 2020). Nurse leaders faced the particular challenge of directing practice changes while ensuring patients and staff were being taken care of (Carias-Sugay et al., 2021; Freysteinson et al., 2021; Losty & Bailey, 2021; Zhao et al., 2020).

Throughout the global pandemic, effective organizational change has been crucial for providing the best patient care possible, keeping staff safe and mitigating the spread of disease. Organizational learning provides a helpful way to conceptualize such change. Organizational learning is a process of 'positive change in an organization's collective knowledge, cognition, and actions, which enhances the organization's ability to achieve its desired outcomes' (Lyman, Hammond, et al., 2019, p. 643). Lyman, Jacobs, et al. (2019) used a systematic review of the literature to create the Organizational Learning in Hospitals model to describe organizational learning in hospitals. The model depicts six contextual factors that are conducive to organizational learning in hospitals (shared purpose, motivation, psychologically safe relationships, adequate infrastructure, skills in quality improvement and experience as a team), as well as five mechanisms by which organizational learning occurs (interaction, collective reflection, deliberate learning, retention and leadership). Lyman, Jacobs, et al. (2019) suggests when these mechanisms happen in the proper context, organizational learning occurs and the organization expands its capacity for achieving its desired goals. For example, collective reflection, in an organization where team members feel psychologically safe and are skilled in quality improvement, can be a powerful process for improving practice and patient outcomes. Lyman et al.'s (2020) study of nurses' experiences of organizational learning helped validate the importance of the factors depicted in the Organizational Learning in Hospitals model and offered some insights into the relationships among them.

However, additional research is necessary to explore whether the Organizational Learning in Hospitals remains valid in extreme circumstances, such as a global pandemic. Currently, there is only scant evidence regarding organizational learning in the context of complex, large-scale events, such as global pandemics (Sagy et al., 2018; Sharma et al., 2021). Thus, leaders have little guidance for facilitating organizational learning during such an event. However, if the Organizational Learning in Hospitals model effectively reflects organizational learning in such unique and challenging circumstances, it could serve as a helpful guide for leaders navigating future challenges. Thus, the primary purpose of this study was to further test the model's validity by examining how well it reflects organizational learning that occurred during the COVID-19 pandemic.

2 | METHODS

This study was conducted using a deductive, qualitative descriptive approach. Qualitative, descriptive studies are commonly used in nursing and health care research to explore phenomena that are not well understood. When using a deductive approach, researchers purposefully select a theory or framework to guide the study. The analysis is,

in part, focused on determining whether the data collected supports the chosen theory as is, indicates the theory should be modified or reveals something entirely unique (Kim et al., 2017). In this case, the Organizational Learning in Hospitals model (Lyman, Jacobs, et al., 2019) guided the study's design and analysis, allowing the researchers to explore the model's validity in the context of a global pandemic. The model, generated through a realist review (Lyman, Jacobs, et al., 2019) and subsequently validated qualitatively (Lyman et al., 2020), depicts how the convergence of six contextual factors and five mechanisms leads to organizational learning in hospitals. Ethical approval for this study was obtained through the researchers' university Institutional Review Board.

2.1 | Setting and sample

Participants were all registered nurses and licenced practical nurses providing direct patient care in an acute care or long-term care setting during the COVID-19 pandemic. Participants were recruited through network recruiting. This approach was chosen to diversify the geographic regions and facility types (e.g., acute care and long-term care) represented in the sample. The researchers first invited several of their professional colleagues to participate and then asked those participants to refer their professional colleagues to participate as well. The final sample included 19 participants, who worked in a total of 16 different facilities, located in eight different states across the United States (Table 1), allowing the results to reflect a breadth of experiences.

2.2 | Data collection

Semi-structured interviews were used to gather information about the participants' experienced changes in the workplace during the COVID-19 pandemic. The authors developed an interview guide based on the Organizational Learning in Hospitals model (Lyman, Hammond, et al., 2019). Participants were asked to describe how their organization prepared for the pandemic, how COVID-19 related practice changes occurred in their organization and the mechanisms and contextual factors present in those change processes. Interviews lasted up to 45 min. Participants received \$20 Amazon.com gift cards. The interviews were audio-recorded and transcribed verbatim. Data collection continued until saturation was achieved.

2.3 | Data analysis

This study involved a deductive approach to thematic analysis, guided by the Organizational Learning in Hospitals model (Lyman, Jacobs, et al., 2019). In concordance with the approach used by Lyman et al. (2020), the interviews were analysed according to the thematic analysis process outlined in Nowell et al. (2017). The researchers' independently familiarized themselves with the data and considered

TABLE 1 Contextual factors and mechanisms by organization

Org.	Organization Description	Contextual factors					Mechanisms					
		Purpose	Motivation	Psychological safety	Infrastructure	Skills	Experience	Leadership	Interaction	Collective reflection	Deliberate learning	Retention
A	-Upper Midwest Region (US) -Short-term acute care -1,318 beds -Level 1 trauma centre -Major teaching hospital -Governmental	X	X	X	X	X	X	X	X	X	X	X
B	-Eastern Eegion (US) -Short-term acute care -952 beds -Level 1 trauma & paediatric trauma centre -Major teaching hospital -Not for profit	X	X	X	X	X	-	X	X	X	X	X
C	-South Central Region (US) -Short term acute care -304 beds -Level 2 trauma centre -Not for profit	X	-	X	-	X	-	X	X	X	X	X
D	-Rocky Mountain Region (US) -Children's hospital -289 beds -Level 1 paediatric trauma centre -Teaching hospital -Not for profit	X	X	X	X	X	-	X	X	X	X	X
E	-Southwestern Region (US) -Children's hospital -457 beds -Teaching hospital -Not for profit	X	-	-	X	X	X	X	X	X	X	X
F	-Rocky Mountain Region (US) -Short-term acute care -121 beds -Governmental	X	-	-	X	X	-	X	X	X	X	X
G	-Rocky Mountain Region (US) -Long-term assisted living -55 beds -Not for profit	X	X	X	-	-	-	X	X	-	-	-

(Continues)

TABLE 1 (Continued)

Org.	Organization Description	Contextual factors					Mechanisms						
		Purpose	Motivation	Psychological safety	Infrastructure	Skills	Experience	Leadership	Interaction	Collective reflection	Deliberate learning	Retention	
H	-South Central Region (US)	-	X	-	X	X	X	X	X	X	X	X	
	-Short-term acute care												
	-817 beds												
	-Level 1 trauma centre												
I	-Major teaching hospital												
	-Governmental												
	-Rocky Mountain Region (US)	X	-	X	X	X	X	X	X	X	X	X	
	-Short-term acute care												
J	-385 beds												
	-Level 2 trauma centre												
	-Teaching hospital												
	-Not for profit												
K	-Northeastern Region (US)	X	X	X	X	-	-	X	X	X	X	X	
	-Short-term acute care												
	-488 beds												
	-Level 1 trauma centre												
L	-Teaching hospital												
	-Not for profit												
	-Rocky Mountain Region (US)	X	-	X	X	-	-	X	X	-	X	X	
	-Long-term skilled nursing												
M	-76 beds												
	-For profit												
	-Rocky Mountain Region (US)	-	-	-	-	X	-	-	X	-	-	-	
	-Residential rehabilitation												
N	-Beds, not disclosed												
	-For profit												
	-Great Lakes Region (US)	X	X	X	X	X	X	X	X	X	X	X	
	-Short-term acute care												
O	-185 bed facility												
	-Level 3 trauma centre												
	-Teaching hospital												
	-Not for profit												
P	-New England Region (US)	X	X	X	X	X	X	X	X	X	X	X	
	-Short-term acute care												
	-221 bed facility												
	-Level II trauma centre												
Q	-Teaching hospital												
	-Not for profit												
	-Teaching hospital												
	-Not for profit												

(Continues)

TABLE 1 (Continued)

Org.	Organization Description	Contextual factors						Mechanisms					
		Purpose	Motivation	Psychological safety	Infrastructure	Skills	Experience	Leadership	Interaction	Collective reflection	Deliberate learning	Retention	
O	-Rocky Mountain Region (US) -Short-term acute care -100 bed facility -Teaching hospital -Not for profit	-	X	X	X	X	X	X	X	X	X	-	
P	-Rocky Mountain Region (US) -Long-term skilled nursing -220 bed facility -For profit	X	-	X	X	X	X	X	-	X	X	X	

the participants' words in relation to the model. Individual findings were then discussed collectively until consensus was reached. These collective interpretations were then compared with the transcripts, to ensure they were truly grounded in the data. Member checking was then used to clarify information shared during the interviews and to enhance the trustworthiness of the analysis. Five participants participated in the member checking process. Using Walker and Avant's (2011) guidelines for concept analyses, two nurses' experiences were selected as model and contrary cases of organizational learning.

3 | RESULTS

COVID-19's spread to the United States amplified complexity, accelerated change and increased uncertainty for healthcare organizations, thus challenging their capacity for organizational learning. To test the validity of the Organizational Learning in Hospitals model (Lyman, Jacobs, et al., 2019) in this unique context, we examined how well the model's proposed tenets aligned with actual experiences of organizational learning. We first identified which contextual factors and mechanisms were present in the organizations where nurses experienced organizational learning (Table 1). Tables 2 and 3 illustrate various examples of the contextual factors and mechanisms described by the nurses. As anticipated, nearly all of the factors were present in most of the organizations, indicating good alignment between the model and nurses' experiences.

Skills was the contextual factor occurring most frequently in organizations nurses described. Nearly all of the nurses' experiences featured teams sufficiently skilled in organizational learning. Experience was the least frequently occurring contextual factor. Half of nurses' experiences featured teams with an adequate base of shared experiences to support their organizational learning. Some participants attributed their teams' lack of shared experiences to staff being temporarily reassigned to various units, and to the use of nurses on short-term travel contracts to fill staffing needs.

The most commonly observed mechanism of organizational learning was interaction, which occurred in all of the organizations where nurses' experienced organizational learning. Nurses reported receiving communication about COVID-19 from their leaders through emails, huddles and staff meetings. Collective reflection was the least frequently observed mechanism. Several nurses described primarily top-down communication about organizational changes, with limited opportunities for collective discussions about what was going well or poorly related to those changes.

We further tested the Organizational Learning in Hospitals model's validity in this context by examining how nurses' experiences differ when the contextual factors and mechanisms associated with organizational learning were generally present (a model case) versus largely absent (a contrary case). Studying contrasting examples of organizational learning offers important insights into the roles the contextual factors and mechanisms play (both individually and collectively) in the organizational learning process.

TABLE 2 Examples of contextual factors

Purpose	Motivation	Psychologically safe relationships	Infrastructure	Skills	Experience
-Creating and publicly displaying a COVID-19 specific purpose statement	-Helping nurses understand how changes protect patients, staff, and community members from getting or spreading COVID-19	-Holding individual meetings with each nurse and unlicensed assistive personnel to address questions and concerns	-Leveraging existing infrastructure (e.g. communication systems, staff development personnel, and surplus staff from ambulatory care departments) to adapt to the unique challenges posed by COVID-19	-Drawing on past experiences of implementing practice changes and responding to crises to inform the organization's COVID-response	-Using shared experiences during COVID-19 to improve communication and teamwork
-Setting specific goals related to complying with PPE best practices	-Using games, activities, and prizes to motivate staff to implement new changes	-Inviting and graciously responding to staff members' suggestions for improvement	-Providing adequate staffing, PPE, and COVID-19 testing resources to meet clinical needs		
			-Identifying creative ways to use infrastructure to support organizational objectives (e.g. using social media to communicate about changes)		

TABLE 3 Examples of mechanisms

Interaction	Collective reflection	Deliberate learning	Retention	Leadership
-Engaging in formal and informal conversations about the implemented change	-Convening group huddles to discuss how implemented changes are affecting daily practice	-Announcing changes during huddles or meetings	-Reviewing changes or new policies in meetings and daily huddles	-Seeking feedback from others
-Sending group text messages to communicate about changes	-Discussing what is going well and what has been difficult during the pandemic	-Sending informative emails	-Nurse educators periodically checking with nurses to review policies and answer questions	-Following up with staff to explain procedures, answer questions, and offer support
-Using a telephone hotline to field questions from staff about COVID and related practice changes		-Providing training modules about new procedures	-Incorporating changes into facility protocols	-Explaining the purpose behind changes
				-Fostering creativity and innovation within the staff

3.1 | Model case

Angela's experience is an example of successful organizational learning in preparation for and in response to the COVID-19 pandemic. In her experience, all of the contextual factors and mechanisms associated with organizational learning were present, before and during the pandemic.

Angela's hospital demonstrated substantial capability for preparing and responding to COVID-19 (skills). Before the first documented cases of COVID-19 occurred in the United States, administrators in

Angela's hospital led preparation efforts (leadership). They worked to establish a shared purpose within the organization by emphasizing that their COVID-19 response was designed to maximize staff safety. They organized a conference in which the hospital's COVID-19 disaster plan was presented to staff. Administrators began sending emails to staff, which included policy and procedure updates, training videos and educational modules for staff to complete (deliberate learning). Administrators promoted retention by establishing processes (infrastructure) for nurses to demonstrate their knowledge and continued proficiency in caring for patients with COVID-19. The nurses

demonstrated motivation by implementing the changes discussed and complying with the required training.

New changes were also explained to staff during change-of-shift huddles, giving staff opportunities to discuss the changes and ask questions (interaction). During the huddles, staff collectively reflected on their own experiences to-date, as well as information gleaned from hearing about other hospitals' experiences. Angela was a relatively new nurse but did not feel embarrassed asking questions to the charge nurse and others on the unit (psychological safety). She described her hospital being focused on learning, so questions are common and expected.

In terms of infrastructure, Angela's hospital had an adequate supply of personal protective equipment for the employees, ample educational resources for staff members and effective mechanisms of communication (emails and staff meetings). However, Angela felt the hospital was understaffed at times, relative to the demands of the pandemic. Some staffing needs were addressed by temporarily reassigning travel nurses and nurses from other units in the hospital. These nurses received little orientation for their new responsibilities. As a result, the permanent staff were overwhelmed with managing both their own responsibilities and assisting the temporary staff.

The temporary and permanent staff were fairly unfamiliar with one another, which made it difficult to work as a cohesive team on the unit. However, Angela's nurse manager had experience and a good working relationship with the unit managers supplying the temporary staff. Angela said the managers were 'good friends ... super compassionate and understanding with each other'. The nurse managers' shared experience and strong relationships facilitated effective collaboration across the various units. For example, the nurse managers were able to help establish clear processes and expectations for sharing staff and transferring patients among the units.

3.2 | Contrary case

Jocelyn's experience is an example of difficult organizational learning. In the residential treatment facility where Jocelyn had her experience, nearly all of the contextual factors and mechanisms associated with organizational learning were absent, before and during the pandemic.

Before the first case of COVID-19 was detected in the United States, Jocelyn's treatment facility started stocking up on personal protective equipment and screening staff for COVID-19 symptoms and potential exposures. As COVID-19 became a more imminent threat, the facility began requiring twice-daily vital sign monitoring for each of its 100 residents. This change was difficult to implement due to long-term staffing shortages and burnout among the nursing staff (inadequate infrastructure).

Corporate-level administrators drove many of the changes within Jocelyn's facility, without input from the nurses or medical personnel. The facility's Director of Nursing actively resisted many of the changes because she felt they would be too much work and was skeptical about whether they would be effective at mitigating the spread of COVID-19. Nurses in the facility shared the Director of Nursing's

frustration and complained to the corporate administrators as well (lack of shared purpose and motivation). The administrators ignored the staffs' opinion and insisted implementation should continue as they had prescribed. The contention between the Director of Nursing and the administrators reflected a lack of effective leadership and growing mistrust between the corporate administrators and the nursing staff. Jocelyn continued to describe the administrator's 'lack of respect for any of [their] opinions' as the greatest challenge they faced during the pandemic (lack of psychological safety).

Jocelyn's treatment facility also faced difficulties communicating changes regarding clinical procedures. Policy changes were typically implanted overnight without communication to the staff (lack of interaction). In some cases, corporate administrators would inform staff about a change through an ineffective email system. All of the nurses shared a single email account that was only accessible during work, so many missed the email informing them of the change (lack of infrastructure). As a result, most nurses primarily learned about clinical changes through word of mouth.

Jocelyn's facility did use deliberate learning in response to COVID-19. Nurses were provided training modules on proper hygiene, hand washing, social distancing and how to use personal protective equipment. Nurses also trained non-medical personnel to measure residents' vital signs, which did expand their capacity to screen residents for COVID-19 symptoms as frequently as necessary. Although the nurses did communicate about their experiences implementing the changes, Jocelyn described them as gossip, rather than a purposeful attempt at collective reflection. Jocelyn was not able to identify any examples of how the facility had worked to sustain any of the changes that were made (retention).

Jocelyn's facility has long experienced rapid turnover at all levels of the organization, resulting in little shared experience for the team to draw on during a crisis. Because the leadership team had turned over so often, they did not have the rapport necessary to establish an effective working relationship with the staff. Although the staff had experienced a fair amount of turnover, several nurses on the team had been working at the facility for many years. These experienced nurses relied on their shared experiences to challenge the leadership team's efforts. Due to the facility's ongoing staffing needs, the experienced nurses felt the leadership team would be unwilling to administer disciplinary action against them.

3.3 | Organizational learning in acute and long-term care

Although nurses' experiences in acute care facilities were not directly compared to those in long-term care and residential facilities, Table 1 suggests the contextual factors and mechanisms associated with organizational learning were more prevalent in acute care facilities. Regardless of which type of facility they worked in, all the nurses' experiences included both successes and challenges related to organizational learning. For example, one nurse's experience in an acute care facility included all of the mechanisms of organizational learning, but

navigating change was still challenging because the team lacked motivation, critical infrastructure and shared experience. Another nurse's experience in a long term care facility was successful, even though motivation and opportunities for collective reflection were lacking. She shared that these deficits were overcome through strong leadership, effective communication throughout the organization, clear expectations, adequate infrastructure and ample opportunities for deliberate learning, which allowed their team to respond effectively to COVID-19.

4 | DISCUSSION

The primary purpose of this study was to test the Organizational Learning in Hospitals model's validity in the context of the COVID-19 pandemic. The model indicates the convergence of certain contextual factors and mechanisms of organizational learning results in organizational learning (Lyman, Jacobs, et al., 2019). Our findings offer support for this claim. Although all of the contextual factors and mechanisms were present in the majority of nurses' experiences of organizational learning, there were stark differences across the nurses' experiences. These differences made it possible to consider how experiences of organizational learning differ based on the presence (or absence) of the factors and mechanisms specified in the Organizational Learning in Hospitals model.

Angela's and Jocelyn's experiences clearly illustrate such differences. In Angela's experience, all the mechanisms and contextual factors converged to yield positive changes in what the organization knew, how it thought and how it functioned. For example, employees in Angela's hospital shared a common purpose, deliberately learned effective strategies for treating and mitigating the spread of COVID-19 and felt psychologically safe enough to discuss, question and refine their COVID-19 response. In contrast, those contextual factors and mechanisms were largely absent from Jocelyn's experience. For example, employees in Jocelyn's organization lacked a cohesive purpose, effective leadership and critical infrastructure (e.g., staff, supplies and an efficient communication platform). As a result, there was substantial resistance to implementing fundamental safety practices.

Although Angela and Jocelyn's experiences were starkly different, other nurses' experiences reflected similar patterns. The convergence of the contextual factors and mechanisms specified in the Organizational Learning in Hospitals model appeared to be associated with organizational learning. Further, the absence of one or more contextual factors and/or mechanisms seemed to significantly impede the organizations' ability to learn. As a whole, these findings further validate the Organizational Learning in Hospitals model (Lyman, Jacobs, et al., 2019), both generally and in the context of a pandemic.

4.1 | Contextual factors

The nurses' experiences also offered helpful insights into organizational learning during a pandemic that may be applicable to future

crises. Although each contextual factor and mechanism is essential for organizational learning generally, some appeared to be particularly important for effective organizational learning within the specific context of a pandemic.

First, psychologically safe relationships were foundational to effective organizational learning in response to COVID-19. When psychological safety is present, nurses are not concerned about potential repercussions when sharing ideas and concerns (Edmondson, 1999). Psychologically safe relationships between administrators and staff helped the staff more readily adapt to a more top-down approach to leadership and to accept changes in clinical procedures, staffing models and resource allocation. Similarly, staff who felt psychologically safe tended to voice their concerns and share ideas in appropriate ways that productively influenced their organizations' COVID-19 responses. Psychologically safe relationships seemed to influence how frequently and how effectively team members interacted, collectively reflected and deliberately learned with one another. Lyman et al. (2020) also found psychological safety to be critical for effective organizational learning.

Second, having a shared purpose and motivation was crucial for sustained engagement in pandemic-related changes. Many nurses reported their organization made daily changes to their practice, yet difficult changes were more palatable when they clearly served a shared purpose, such as patient, community and staff health. Shared purpose also motivated team members to continually learn and stay compliant with new practices. Nurses felt motivated when leaders invested time in explaining why changes were necessary and provided staff opportunities to discuss the changes. Vázquez-Calatayud et al. (2021) similarly identified motivation, arising from both intrinsic and extrinsic factors, as vital to nurses' engagement in ongoing professional development.

Third, adequate infrastructure was crucial for healthcare organizations to adapt to changes caused by the pandemic. Almost all nurses described an inadequate supply of personal protective equipment at some point during their experiences during the pandemic. Increased patient census and nurse turnover, coupled with numerous staff being exposed to or infected with COVID-19 also posed challenges. These issues were compounded in organizations experiencing inadequate staffing and staff burnout prior to the pandemic. Others (Chen et al., 2021; Manzano García & Ayala Calvo, 2021; Wahlster et al., 2021) have also identified staff and equipment shortages as contributing to nurse burnout during the COVID-19 pandemic.

However, hospitals with adequate infrastructure in other regards (staffing, educational processes and emergency response experience) seemed better able to adapt to challenges posed by the pandemic. For instance, designated trauma centres had plans, supplies, training and experience specific to disaster response. Academic research hospitals had experience with and established systems for implementing new practice changes (e.g., lines of communication, huddles professional educators and technology platforms for training modules). Rao et al.'s (2021) description of the Children's Hospital Colorado response to the COVID-19 pandemic illustrates how some organizations were able to access, establish and deploy critical infrastructure.

Fourth, shared experience also influenced organizations' responses to the COVID-19 pandemic. Staffing needs necessitated temporarily reassigning nurses to work on different units and hiring travel nurses, leaving many nurses caring for patients alongside staff with whom they had never previously worked. As a result, it was more difficult to ask for help, draw on each other's strengths and work collaboratively. In some cases, the shared experience of working through the COVID-19 pandemic brought a sense of unity and collective confidence to the staff. In other cases, nurses described their shared experiences as contentious and causing strain on team relationships. Thompson and Kusy (2021) also noted teams' mixed responses to working together through the COVID-19 pandemic (i.e., some became stronger, whereas others became less civil, more selfish and less effective), attributing those differences to the leader's effectiveness.

4.2 | Mechanisms

Although all the mechanisms of organizational learning were critical for successful change during the COVID-19 pandemic, leadership appeared particularly foundational for organizational learning. Nearly all nurses described leadership as part of their experience of organizational learning, yet the diversity of leadership strategies they experienced offers important lessons for effective leadership. Leaders were pivotal in shaping the organizational context and implementing the mechanisms of organizational learning. For example, effective leaders helped team members find a motivating shared purpose, fostered psychologically safe conversations about change, efficiently allocated staff and PPE and ensured hard-won changes were retained. Lyman et al. (2020) similarly described leadership as central to organizational learning. This study adds credence to their suggestion that the Organizational Learning in Hospitals model may need revision to more accurately reflect the centrality of leadership (Lyman et al., 2020).

Additionally, organizational learning appeared to occur most readily when the mechanisms occurred in a context conducive to organizational learning and when multiple mechanisms were used to complement each other. For example, contextual factors such as a strong leadership, a sense of shared purpose and adequate infrastructure were crucial for effective deliberate learning. Deliberate learning complemented by other mechanisms, such as structured opportunities to collaboratively problem-solve during the learning process (interaction), collectively reflecting throughout the changes and processes to evaluate and audit learning to promote retention. These findings further validate Lyman, Jacobs, et al.'s (2019) supposition that organizational learning occurs as the contextual factors and mechanisms in the Organizational Learning in Hospitals model converge.

4.3 | Special challenges in long-term care and residential facilities

Although differences between nurses' experiences across different types of healthcare facilities were not a specific focus of this study, it

is worth noting long-term care and residential facilities may have experienced special challenges related to organizational learning. Even in the absence of a global pandemic, organizational learning in long-term facilities may be impeded by chronic issues related to inadequate staffing (Werner & Coe, 2021), low staff retention (Kennedy et al., 2021), stigma toward those working in aged care and its psychological impact on staff (Manchha et al., 2021) and few opportunities for front-line staff to engage in organizational learning (Lyman et al., 2021). During the COVID-19 pandemic, severe shortages of staff, PPE and testing supplies (McGarry et al., 2020; Ouslander & Grabowski, 2020) while caring for some of the most vulnerable members of society likely exacerbated those underlying challenges to organizational learning.

4.4 | Implications for nursing management

Nurse leaders have fulfilled a crucial role during the COVID-19 pandemic, often with too few resources and evidence to support their efforts. This study reaffirms the importance of nurse leaders' role in cultivating a context conducive to organizational learning and facilitating the mechanisms by which it occurs. The Organizational Learning in Hospitals model offers an evidence-based framework nurse leaders can use to foster organizational learning, even during particularly complex circumstances such as a global pandemic. Given that every contextual factor and mechanism in the model is important for effective organizational learning, nurse leaders can use the model to ensure each aspect of the model is being attended to. For example, when staffing and equipment shortages (infrastructure) demand much of the leader's time and attention, the model may be a good reminder for the leader to also invest energy in sustaining the team's psychological safety. When a team's motivation to engage in a necessary change begins to fade, the model may prompt the leader to renew the teams' focus on a shared purpose. Or a leader might use the model to help plan for effective change, perhaps like a checklist—to ensure the purpose is clear, strong leadership is present, sufficient resources are allocated, opportunities for deliberate learning and collective reflection are available and processes for sustaining the change are in place.

4.5 | Limitations

The retrospective nature of this study made it possible to document organizational learning over time. However, a longitudinal design, documenting those changes in real-time, may have yielded richer descriptions of those changes. This study was informed by participants' personal narratives, rather than direct observation or numerically measured changes. Although such narratives are critical for understanding organizational learning, they can be subject to bias and imperfect memory. The Mountain West region was more heavily represented in the sample than other regions of the United States, particularly the long term care facilities, which may limit how well the results reflect organizational learning in other areas.

4.6 | Future research

Although this study makes an important contribution to the literature, additional research is needed to more fully explore organizational learning during unique and challenging events, such as global pandemics. Future research may benefit from using longitudinal, mixed method designs and expanding the sample beyond front-line nurses. Longitudinal research could offer better insights into how the presence of various factors and mechanisms of organizational learning prior to the event influence organizational learning during and after the event. Longitudinal designs could also provide a more detailed view of the dynamics among those factors and mechanisms. Mixed methods designs could be a valuable strategy to leverage the strengths of both qualitative and quantitative methods to create a more complete understanding of organizational learning and its effects. Expanding future samples beyond front-line nurses could add helpful perspectives (e.g., nurse managers, physicians, therapists and assistive personnel) and provide richer descriptions of the organizational learning process. Finally, future research could more intentionally explore organizational learning in long-term care and residential facilities to examine the validity of the Organizational Learning in Hospitals model (Lyman, Jacobs, et al., 2019) beyond acute care hospitals.

5 | CONCLUSIONS

This study adds validity and context to the Organizational Learning in Hospitals model (Lyman, Jacobs, et al., 2019), particularly in the context of a global pandemic. Each contextual factor and mechanism depicted in the model is important, and their convergence leads to organizational learning. Practical examples contribute context to the model and offer helpful insights for fostering organizational learning. Nurse leaders have a central role in fostering organizational learning and can use the Organizational Learning in Hospitals model to guide their efforts.

CONFLICT OF INTEREST

The authors have no conflict of interest to disclose.

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ETHICS STATEMENT

This study received ethical approval from the Brigham Young University Institutional Review Board. The approval number is E2020-253.

DATA AVAILABILITY STATEMENT

Data are available on request due to privacy/ethical restrictions.

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